JPL planetary Gravity Efforts and Techniques

A.S. Konopliv and W.L. Sjogren (both at Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91 109; 818-354-6105; e-mail: ask@krait.jpl.nasa.gov)

The Magellan spacecraft has provided the highest resolution global gravity data set from spacecraft measurements. The X-band Doppler tracking is sensitive to harmonic degree of 120 or greater. We have currently developed a 75th degree and order global spherical harmonic model. The common method in determining the gravity field involves constraining the harmonic coefficients to zero with an uncertainty given by the Kaula rule for that particular planet. We will outline the current practice at JPL of applying a spatial constraint instead based upon the unconstrained covariance of the gravity field, We will present the results for our Venus and Mars gravity field determination efforts and will review our efforts at developing higher degree models on the Cray T31) supercomputer with 256 processors.

1.1995 IUGG Meeting

2.001229826

3. (a) A.S. Konopliv
Jet Propulsion Lab
M/$ 301- 125J
Pasadena, Ca **91109**
(b) Tel: 818-354-6105
(c) Fax:818-393-6388
(d) E-mail:
ask@krait.jpl.nasa. gov

4. IAG

5. G3

6. Oral

7. None

8. No